UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/886,213	06/22/2001	Yuji Matsuyama	210029US3DIV	7008

22850 7590 06/26/2003

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER
JOLLEY, KIRSTEN

ART UNIT	PAPER NUMBER
1762	7

DATE MAILED: 06/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/886,213	Applicant(s) MATSUYAMA ET AL.	
	Examiner Kirsten Crockford Jolley	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 25-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,25-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. *09/272,782* .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Arguments

1. The 35 USC 112, 2nd paragraph and 35 USC 102 and 103 rejections made in the prior Office action have been withdrawn in response to Applicant's amendments to the claims.

2. Applicant's arguments with respect to claims 1-8 and 25-27 have been considered but are moot in view of the new ground(s) of rejection. The new ground of rejection was necessitated by the amendments to the claims.

Examiner's Suggestions

3. In each of claim 2, line 6, claim 25, line 9, claim 26, lines 7-8, and claim 27, line 6, it appears that the word --to-- is missing between "as" and "not", and the Examiner suggests changing "to" to --of--.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 26, lines 5-6, the limitation "heat-treating the substrate held on a supporting and heating member *via support pins* capable of appearing and disappearing from and into the

holding and heating member [emphasis added]" is confusing because it is not clear whether the phrase "via support pins" refers to the manner in which the substrate is heat-treated, or refers to the manner in which the substrate is held on the supporting and heating member. However, it is noted that the specification does not appear disclose either scenario; the specification appears to teach that the heat-treating occurs when the substrate is held *directly on* the supporting and heating member and is performed by the heating member itself. For the purpose of examination, claim 26 has been interpreted as requiring a supporting and heating member having support pins therein, wherein heat-treating is performed when the substrate is held on the supporting and heating member.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-8 and 25-27 are rejected under 35 U.S.C. 102(e) as being anticipated by You et al. (US 6,066,574).

You et al. discloses a method of heat-treating a substrate coated with a coating solution (BCB) which oxidizes at a high temperature. You et al. teaches providing a series of three hot plate heating stations (a solvent dispersal station, curing station, and cool-down station) whereby lifting pins 23 contact the lower surface of the wafer substrate and controllably lower and lift the

substrate 12 onto hot plate heating element 21 (see col. 6 and Figure 3). You et al. teaches that the controllable ramping up and down prevents oxidation of the BCB coating since purging of the atmosphere to provide an inert atmosphere in the heating chamber takes a similar time (col. 6, lines 31-39 and col. 7, lines 44-47).

With respect to claims 1 and 5, the Examiner notes that the introduction of the substrate into the second curing hot plate station and the commencement of ramping down of the substrate while simultaneously purging the atmosphere using inert gas meets Applicant's claim limitation of a) lowering an oxygen concentration of a treatment atmosphere when a temperature of the substrate is lower than the temperature at which the coating solution oxidizes. It is known that the temperature is initially lower than the temperature at which the coating solution oxidizes because You et al. teaches that the "rampings prevent oxidation of BCB" (col. 6, line 31). With respect to claim 25, at this point in time the substrate is held on support pins 23 capable of appearing and disappearing from and into a holding and heating member for supporting the substrate apart from the holding and heating member.

Heat-treating in the second curing hot plate station of You et al. meets Applicant's limitation b) of heat-treating the substrate in the treatment atmosphere of which the oxygen concentration has been lowered so as to not cause oxidation of the coating solution. With respect to claim 26, during this step the substrate is held on hot plate 21 -- a supporting and heating member.

You et al. teaches transferring the substrate to a cool-down station where the substrate is subsequently cooled and ramped up from the cooling plate, thus meets the limitations of step c) of cooling the substrate on a cooling plate to a temperature lower than the temperature at which

the coating solution oxidizes. After the cooling process is performed (and necessarily after the equipment is shut down), it is noted that the treatment atmosphere is returned to that with the original oxygen concentration. With respect to claim 27, it is noted that after this cooling step is performed, the substrate is apart from the cooling plate by supporting pins disposed adjustably in height on the cooling plate. After the cooling process is performed and necessarily after the equipment is shut down, it is noted that the treatment atmosphere is returned to that with the original oxygen concentration. As to claim 7, it is noted that the substrate temperature is necessarily already lowered below a desired value in the cool-down station, and then removed from the cool-down station, before the equipment is shut down.

As to claim 4, You et al. teaches that BCB is organic at col. 2, line 31.

With respect to claims 6 and 8, it is noted that, after removal from You et al.'s coating and heat treatment apparatus, the substrate is exposed to air -- this is both after the passage of a predetermined time from the completion of heat treatment (even if only a fraction of a second) and when the temperature of the substrate is lower than a predetermined value (this is known since the substrate has already been cooled to a desired value).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mahawili (US 6,090,212) is cited for its teaching of a heating plate having lift pins therein which is capable of providing an inert atmosphere during heating (col. 7, lines 1-23). Reardon et al. (US 5,658,387) and Strodtbeck et al. (US 5,885,353) are cited to demonstrate the state of the art with respect to heating and cooling plates having supporting/lifting pins.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten Crockford Jolley whose telephone number is 703-306-5461. The examiner can normally be reached on Monday to Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on 703-308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193.

kcj
June 20, 2003

SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700